Instruction Manual Version 01/2007

3MP 21" High Bright Color Flat Panel Display

SCD 21310

display SOLUTIONS

SIEMENS

SIEMENS

LC displays for medical diagnostics

3MP 21" High Bright Color Flat Panel Display SCD 21310

Instruction Manual

Introduction 1

Safety notes 2

Description 3

Application planning 4

Assembly 5

Connecting 6

Commissioning 7

Software description 8

Operation 9

Service and maintenance 10

Troubleshooting 11

Technical specifications 12

Dimensional drawings 13

Appendix A

01/2007
A5E00456472N-001

Safety Guidelines

This manual contains notices you have to observe in order to ensure your personal safety, as well as to prevent damage to property. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring only to property damage have no safety alert symbol. These notices shown below are graded according to the degree of danger.

Danger

indicates that death or severe personal injury **will** result if proper precautions are not taken.

Warning

indicates that death or severe personal injury **may** result if proper precautions are not taken.

Caution

with a safety alert symbol, indicates that minor personal injury can result if proper precautions are not taken.

Caution

without a safety alert symbol, indicates that property damage can result if proper precautions are not taken.

Notice

indicates that an unintended result or situation can occur if the corresponding information is not taken into account.

If more than one degree of danger is present, the warning notice representing the highest degree of danger will be used. A notice warning of injury to persons with a safety alert symbol may also include a warning relating to property damage.

Qualified Personnel

The device/system may only be set up and used in conjunction with this documentation. Commissioning and operation of a device/system may only be performed by **qualified personnel**. Within the context of the safety notes in this documentation qualified persons are defined as persons who are authorized to commission, ground and label devices, systems and circuits in accordance with established safety practices and standards.

Prescribed Usage

Note the following:

Warning

This device may only be used for the applications described in the catalog or the technical description and only in connection with devices or components from other manufacturers which have been approved or recommended by Siemens. Correct, reliable operation of the product requires proper transport, storage, positioning and assembly as well as careful operation and maintenance.

Trademarks

All names identified by ® are registered trademarks of the Siemens AG. The remaining trademarks in this publication may be trademarks whose use by third parties for their own purposes could violate the rights of the owner.

Disclaimer of Liability

We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.

Siemens AG
Automation and Drives
Postfach 48 48
90437 NÜRNBERG
GERMANY

Order No.: A5E00456472N-001
℗ 01/2007

Copyright © Siemens AG 2007.
Technical data subject to change

Table of contents

1 Introduction 7

1.1 Contents of this document 7

2 Safety notes 9

3 Description 13

3.1 Scope of delivery 13

3.2 Applications 13

3.3 Important features 14

4 Application planning 17

4.1 Installation site 17

4.2 Distances and arrangement of units 18

5 Assembly 19

5.1 Mounting the display 19

6 Connecting 21

6.1 General connection information 21

6.2 Connector location 22

6.3 Power connector 23

6.4 DVI connector 23

6.5 Description of connection procedure 24

7 Commissioning 25

7.1 Use of the serial interface 25

7.2 Switching between portrait and landscape orientation 25

7.3 Switch on the display and PC 26

7.4 Screen saver 27

7.5 Graphics controller settings 27

7.6 Information on the display settings 28

7.7 Check for pixel defects 28

7.8 Color coordinate setting 29

8 Software description 31

8.1 Program for changing the display settings 31

8.2 Display-specific software support in SMfit ACT® Basics 32

9 Operation 33
9.1 Switch on the display and PC 33
9.2 Measures in the event of an error 33
10 Service and maintenance 35
10.1 Cleaning 35
10.2 Maintenance 36
11 Troubleshooting 39
12 Technical specifications 41
12.1 Display features 41
12.2 Power supply 41
12.3 Inputs/outputs 42
12.4 Controls and connectors 42
12.5 Mechanical design 43
12.6 Climatic conditions 43
12.7 Mechanical requirements 44
12.8 Safety regulations 44
12.9 Electromagnetic compatibility 45
13 Dimensional drawings 47
13.1 Portrait 47
13.1.1 Front view 47
13.1.2 View from right with cover 48
13.1.3 View from right without cover 49
13.1.4 Rear view 50
13.1.5 View from above 51
13.2 Landscape 52
13.2.1 Front view 52
13.2.2 View from left 53
13.2.3 Rear view 54
13.2.4 View from above 54
A Appendix 55
A.1 Guidance and manufacturer's declaration - Electromagnetic emissions 55
A.2 Loss of warranty 55
A.3 Warranty 56
A.4 Repairs 56
A.5 Environmental protection 56
A.6 Accessory devices 56
A.7 Contact address 56
Index 57

Introduction

1

1.1 Contents of this document

This document describes the functionality and appropriate use of the SCD 21310 High Bright Color Flat Panel Display.

To ensure clarity, it does not contain all detailed information on this product.

The contents of this document are neither part of a previous or existing agreement, commitment or legal relationship, nor does it modify such.

Safety notes

2

To ensure safe and reliable operation, the display must be properly transported, stored, mounted and installed, and it must be operated and serviced with the appropriate care. The unit must only be used for applications in which displays are normally used. The technical specifications of the product must be observed.

In this document, the term "users" refers to medical personnel (e.g. radiology technician, medical technician), while the term "servicing" implies specifically trained and authorized personnel (e.g. hospital technician, medical equipment manufacturer).

For safety reasons, the following precautions must be observed:

Danger

Failure to observe the warning information in this document presents danger to life. Severe personal injury or damage to property may occur.

Do not open the unit

Certain components within the unit operate at high-voltages, i.e. touching them presents a danger to life!

Never use defective power cables

A damaged power cable may result in fire or electric shock. Always hold the plug when pulling to disconnect the power cable.

Do not insert any objects into the housing

Objects inserted into the housing may result in damage to the unit or personal injury.

Do not place any objects on top of the units

Liquid entering the unit may result in fire or electric shock.

Do not connect the display in the presence of patients

Avoid all possible contact with patients when handling the connection cables.

Correct calibration reduces the risk of misdiagnosis

When used in medical environments for diagnostic purposes, improper calibration of the display can result in incorrect diagnoses.

Caution

Improper installation may result in extensive damage to property.

Installation must be performed properly:

1. To prevent injury to patients and users of a medical electrical system utilizing Siemens products in a patient environment, please observe the safety requirements of IEC 60 601-1-1 and its national equivalent for "Specifications for the Safety of Medical Electrical Systems" when assembling the system.
2. Use appropriate measures to ensure that leakage currents in particular remain below the necessary limits. Appropriate measures include:
   - Use of a separator device for the input or output signal component
   - Use of a safety isolating transformer
   - Use of the additional protective conductor terminal
3. During installation, only use cables recommended by the manufacturer.
4. Use power cables with protective ground contact. Only plug the device into sockets with protective grounding.
5. For certain applications, the video ground can be connected to protective ground via the additional protective conductor terminal in the plug panel (IEC 60 601-1-1 must be observed).
6. Close the plug panel using the provided cover, and lock it with the screw.
   Note to users:
   The closed connector panel must not be opened by the user.
   Servicing information:
   If housing components have to be removed for servicing, this must not be carried out in the presence of patients, users, or other persons not involved with servicing.
7. The following applies to installations in the USA and Canada:
   Molded power supply plugs must comply with the requirements for "hospital grade attachments" CSA Std. C22.2 No. 21 and UL 498.

Caution

Failure to observe warnings may result in substantial damage to property.

Do not subject device to excessive shocks

Take care when transporting! Use the original packaging! The panel in particular should be protected against shock.

Notice

If the panel surface is touched, the physical contact or an electrostatic discharge may cause a brief disturbance in the picture quality.

See also

Installation site (Page 17)
General connection information (Page 21)
Cleaning (Page 35)

Description

3

3.1 Scope of delivery

Note

Siemens recommends retaining the packaging material for subsequent transport of the display.

SCD 21310 D

- Display with stand

SCD 21310 DP

- Display with protective glass pane and stand

The scope of supply of both the SCD 21310 D and SCD 21310 DP includes the following components:

- CD with user manual and SMfit ACT® Basics
- European power cable
- US power cable
- Dual link DVI video cable

3.2 Applications

The High Bright Color Flat Panel Display

SCD 21310 D	Order No.: 6GF6200-4CA23
SCD 21310 DP	Order No.: 6GF6200-4CA25

has been specially designed for medical diagnostics.

The display is available in a desktop version (D = desktop) either with or without an optional protective glass pane (P = protective glass).

3.3 Important features

The display has the following features which permit a wide range of applications:

Flawless picture reproduction with LCD technology

Image geometry distortions do not occur with LCD technology.

The Flat Panel Display provides a flicker-free picture even at low refresh rates. The display thus fulfills even the strictest ergonomic requirements.

The SCD 21310 High Bright Color Flat Panel Display is equipped with an active 21" TFT display module with IPS (In-Plane Switching) technology. The module offers maximum contrast and color stability across an extremely wide viewing angle. The screen resolution has been optimized to display 1536 x 2048 pixels.

Fully Automated Stability

The Flat Panel Display is equipped with an automated stability system (Fully Automated Stability) in accordance with the DICOM standard. The integrated stability system (ISS) ensures consistent luminance levels using an internal light sensor located at the center of the backlight unit. Using SMfit ACT® and one of Siemens external photometer options, the ISS sensor is automatically adjusted to ensure superior, traceable calibration.

The display is precalibrated in the factory using extremely sensitive instruments and the calibration data is stored in the five internal look-up tables. The saved calibration data simplify installation and servicing: Even if the graphics card or workstation is replaced, e.g. during upgrade, the graphics settings are retained and there is no need to recalibrate the monitor.

Compact design

The low weight, small size, minimal power consumption and low heat generation of the display provide advantages over conventional CRT monitors.

Settings for optimizing the application

The display features can be adjusted with the SMfit ACT® Basics and SMfit ACT® Calibration software tools to ensure optimal image quality.

The display can be adapted to the local lighting conditions at the click of a mouse using the five preset practice-oriented look-up tables or it can be automatically calibrated to the desired luminance levels using the SMfit ACT calculate LUT function .

In this way, the color coordinates of the display can be easily adapted to the user’s preferences and to ensure optimal matching with neighboring displays.

Dual link DVI input

The display is connected to the workstation via dual-link DVI.

Innovative mechanical design

The mechanical properties of the display support quick and easy installation.

The easily removable cover provides convenient access to the spacious connector panel, where the connections are clearly arranged.

Three openings in the cover provide practical cable routing when changing the orientation of the display or mounting on the wall or ceiling.

Protective glass pane

The SCD 21310 DP has a protective pane with a non-reflective optical coating in front of the LCD panel to protect the panel surface from knocks and scratches. The space between the protective pane and the panel is sealed to prevent dust from entering, thus helping ensure the internal surfaces remain clean.

Operation in portrait or landscape mode

The device can be operated in portrait or landscape mode. The orientation is automatically detected by the integrated position sensor.

When the connected workstation is booted, the current orientation is recognized and the display is automatically supplied with the approriate video timing. A rotation function in the graphics card is not necessary.

Application planning

4

4.1 Installation site

Provide adequate ventilation

Ventilation holes are located on the rear of the housing.

Observe the permissible ambient temperature range

The permissible ambient temperature range must not be violated.

Avoid reflections on the screen

The display has an anti-glare surface which is only effective if the screen is clean and grease-free.

The SCD 21310 DP display is also equipped with a protective glass pane with a non-reflective optical coating on both sides and is particularly suitable for use in sterile environments when cleaning agents are used. Please note the cleaning instructions (Page 35) .

The display should be positioned such that reflections of lights, windows, furniture with shiny surfaces or light-colored walls do not appear on the screen.

In order to reduce mirroring on the display, only use anti-glare lights (non-dazzling) for the ceiling lighting.

Change of environment

If brought from the cold into a warm environment, water may condense inside the unit. The unit should not be switched on until all condensed water has evaporated, including that within the unit. This may take several hours, depending on the conditions.

See also

Cleaning (Page 35)

Climatic conditions (Page 43)

4.2 Distances and arrangement of units

The unit should be positioned on a hard, level and horizontal surface. It should be positioned at least 10 cm from the side and rear of a wall, or 15 cm from other equipment. The display can be mounted flushly with horizontally and vertically adjacent displays.

Assembly

5

5.1 Mounting the display

More information

Please note the instructions in the user manual
"Multifunctional base for LC displays SAB 2107 RC/SAB 2110 RC".

The SCD 21310 display is supplied in portrait orientation on an SAB 2110 RC stand.

For ceiling mounting (VESA adapter / 100 x 100 mm) or installation with the stand, proceed as follows:

- Affix the display on the VESA adapter or stand using the appropriate screws to secure it.

Because the screws are extremely important for securing the display, it is essential that the screws used adhere to the following specifications:

Fastening screw specifications	
Number	4
Thread	M4
Strength	8.8 in accordance with ISO 898-1
Insertion depth	6 mm minimum / 8 mm maximum
Torque	3 Nm

See also

Switching between portrait and landscape orientation (Page 25)

Connecting

6

6.1 General connection information

Caution

All information and warnings related to this product must be observed to ensure danger-free operation.

Caution

Observe shielding measures

The shielding measures described in the applicable national EMC guideline must be observed. If these guidelines are not observed, malfunctioning of the display may result.

Information on cable installation

- Only shielded cables are permitted for all signal connections.
- All plug connections must be screwed tight or locked if the corresponding facility is present on the connector.
- Signal and power cables must not be routed through the same duct.
- The display must not share a power supply with motors or valves (interference!).
- Externally connected cables can represent a trip hazard. Please ensure that all incoming cables are safely routed.

See also

Electromagnetic compatibility (Page 45)

Safety notes (Page 9)

Guidance and manufacturer's declaration - Electromagnetic emissions (Page 55)

6.2 Connector location

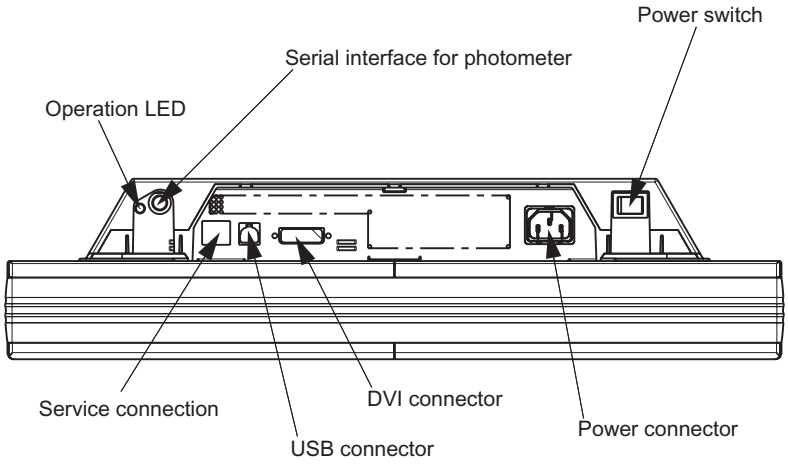


Figure 6-1 Connector panel

Power connector and DVI connector

The power and DVI connectors are located within the connector panel under the cover on the rear of the display.

Caution

The connector panel cover must only be opened for servicing. Patients must not be present when the cover is open.

Serial interface for photometer

Caution

Only photometers tested for calibrating the equipment may be connected to the serial interface. Only service personnel or those trained by them may connect or disconnect a device from the unit. A photometer must not be connected in the presence of the patient.

The serial interface is freely-accessible next to the cover of the connector panel.
This 6-pin mini-DIN socket is used to connect an ambient light sensor or a photometer.
The Serial Spot Meter, the Universal Serial Luminance Meter and the
Advanced Serial Luminance Meter have been approved as photometers.

USB connection

The USB port supports communication between the display and a connected PC. This connection can be used, for example, to communicate with SMfit ACT® (Version 4.0 and higher) if the graphics card used does not support the DDC channel

Service connection

The service connection is used by service personnel for loading software updates.

See also

Safety notes (Page 9)

6.3 Power connector

Caution

Only use the power cable supplied with the display, or a cable with a PE conductor and an appliance socket plug in accordance with DIN 49 547, IEC 320 (max. length 3 m, cable e.g. H05VV-F 3x1.0 mm²). Furthermore, the cable must adhere to all local safety regulations applicable to the specific country in which the display is used.

Information for installations in the USA and Canada

Molded power supply plugs must comply with the requirements for "hospital grade attachments" CSA Std. C22.2 No. 21 and UL 498.

Power supply

The display power supply is connected using an appliance plug cable.

- Check the permissible power supply range before connecting the display.

See also

Power supply (Page 41)

6.4 DVI connector

The display has a dual-link DVI-D connector. Use the cable supplied or similar high-quality cable. The picture quality, noise immunity and radiated interference of the entire system depend on cable quality and length.

6.5 Description of connection procedure

Caution

The angle, position and height of the display can be changed on the preinstalled SAB 2110 RC stand. During handling, the display can tip downwards, potentially pinching body parts between the housing and stand.

The stability of the SCD 21310 display with the supplied SAB 2110 RC stand has been tested. If a different stand or wall bracket is used, please ensure that the display is secure.

More information

Please note the instructions in the user manual
"Multifunctional base for LC displays SAB 2107 RC/SAB 2110 RC".

1. Place the display on a stable, horizontal surface.
2. If fastened, loosen the combo torx-slotted screw from the connector panel.
3. Remove the cover from the connector panel.
4. Connect the appliance cable plug to the display's power connector
5. Connect the DVI plug to DVI socket and fasten the connector screws
6. If needed, connect USB cable to the display's USB port.
7. Feed the appliance cable, the DVI cable and, if needed, the USB cable through one of the three cable openings in the cover. Please route the cables with some play through the connector panel to ensure that the plug connections are not detached. Select one of the three cable openings in the cover that best suits the orientation of the display. Please ensure sufficient play is allocated for the cables.
8. Replace the cover on the connector panel.
9. If desired, the connector panel cover can be fastened using the combo torx-slotted screw.

See also

Scope of delivery (Page 13)

Switching between portrait and landscape orientation (Page 25)

Commissioning 7

7.1 Use of the serial interface

The display has a serial RS-232 interface with a 6-pin mini-DIN socket. The following units may be connected to the socket:

- Ambient light sensor for the SCD display series (permissible in the patient environment)
- Universal Serial Luminance Meter with a 9-pin Sub-D to 6-pin mini-DIN adapter *)
- Advanced Serial Luminance Meter with 9-pin Sub-D adapter to 6-pin mini DIN *)
- Serial Spot Meter with 9-pin Sub-D to 6-pin mini-DIN adapter *)

*) This service mode is not permissible in the presence of patients.

7.2 Switching between portrait and landscape orientation

Note

Use of a graphics card picture rotation function is not recommended

Many graphics cards support image rotation functions. The use of such functions is not recommended. If such a function is used, the setting must be reset upon rebooting the workstation.

Adjusting orientation prior to rebooting the workstation

The SCD 21310 display is shipped in portrait orientation, but it can also be operated in landscape orientation.
The display has an internal position sensor that automatically recognizes it's orientation when the workstation boots up. The orientation of the display should be set prior to switching the display on. This ensures that the EDID data valid for the set display orientation is available to the graphics card.

Adjusting orientation after rebooting the workstation

If the orientation of the display is changed during normal operation, it may be necessary to restart the workstation to ensure that the EDID data are reread. Please observe the instructions for the workstation supplier and/or operating system.

More information

Please also note the instructions in the user manual "Multifunctional base for LC displays SAB 2107 RC/SAB 2110 RC" regarding switchover of the orientation of the display.

See also

Mounting the display (Page 19)

Description of connection procedure (Page 24)

7.3 Switch on the display and PC

Notice

Only switch on the PC after the orientation of the display has been set

Please note when changing the orientation of the display between portrait and landscape, the PC should only be switched on after the adjustment has been made. (Page 25) .

The display and PC can be switched on in any order (requirement: The PC and display are connected through a DVI cable and the graphics card supports the DDC channel).

Notice

The operation LED does not light green after power has been switched on?

If the operation LED does not light up green after the equipment has been switched on and a video signal has been applied, please check the system for basic connection and operating errors before requesting service personnel.

Switching displays on before the PC:

1. Switch on all displays.
   The operation LED blinks green.
2. Switch on the PC.
   The operation LED lights green (if the connected signal can be shown by the display).

Switching PC on before displays:

1. Switch on the PC.
2. Switch on all displays.
   The green operation LED is lit (if the connected signal can be shown by the display).

See also

Switching between portrait and landscape orientation (Page 25)

Troubleshooting (Page 39)

7.4 Screen saver

- A screen saver function should be used in order to reduce "image sticking" that may occur with TFT displays.

Image sticking

Image sticking is an effect in which a faint image of the previous screen contents can be seen after the display contents have changed. By using a screen saver with continuously changing screen contents, an unnecessary long depiction of a single image on the screen can be avoided.

7.5 Graphics controller settings

When the PC is switched on, the display properties are read out and the graphics controller is initialized accordingly. The graphics controller must support DDC communication. After this process, the display is recognized, for example, by Windows as plug-and-play device. The EDID data (**E**xtended **D**isplay **I**dentification **D**ata) are transmitted to the graphic card via the DVI cable DDC channel.

To operate the display at the desired resolution, a driver designed for the graphics controller in use must be installed.

Once the driver has been successfully installed, the resolution can be configured as dictated by the driver and the operating system settings. Using these settings, the display can, for example, be changed from landscape to portrait format. Please refer to the graphics controller manufacturer’s manual for detailed information about installation and configuration of the graphics controller.

7.6 Information on the display settings

All displays are optimally preset in the factory such that adjustments are not usually required; nevertheless, the programs SMfit ACT® Basics and SMfit ACT® Calibration (Version 3.4 or higher) allow one to modify the settings if so desired

Please note the operating system manufacturer's instructions related to power management settings. The display supports the so-called DPMS mode (Display Power Management Signaling), which can be used for energy saving.
For example, the display can be switched off automatically after 20 minutes using DPMS

See also

Program for changing the display settings (Page 31)

7.7 Check for pixel defects

Pixel defects (small bright or dark dots) can occur in LCD monitors. During the manufacturing process, all displays are checked for the permitted number of defective pixels.

During setup, the display can be checked as follows using SMfit ACT® Calibration and SMfit ACT® Basics:

- Generate a black test screen and examine the screen for luminous pixel errors.
- Generate a white test screen and examine the screen for non-luminous pixel errors.

Pixel defects on an LCD monitor can not be corrected.

- Make a note of the position of the defective pixel.

7.8 Color coordinate setting

More information

For further details, please refer to the SMfit ACT® documentation.

The color coordinates of the SCD 21310 display are measured during the factory calibration procedure and stored in the display as reference values. Users can adjust the color coordinates to their application requirements by selecting one of the various internal LUTs. Users can also tailor the display to specified color coordinate values with the SMfit ACT® function "Calculate Calibration Data"

Note

Adjusting the color coordinates will generally reduce the maximum luminance levels.

See also

Program for changing the display settings (Page 31)

Software description

8

8.1 Program for changing the display settings

Note

The SCD 21310 High Bright Color Display features a latest generation controller module and is supported by the calibration and quality control software SMfit ACT® version 3.4 and higher.

SMfit ACT® Basics

The SMfit ACT® Basics program is normally included in the software and documentation CD shipped with each display. The software is also available as a free download on the Siemens Display Technologies website.

The SMfit ACT® Basics software contains some SMfit ACT® Calibration functions. The software and documentation CD also contains SMfit ACT® Basics documentation. Additional information may be contained in a Readme.txt file on the installation CD.

SMfit ACT® Calibration and SMfit ACT® Remote

SMfit ACT® Calibration is a powerful calibration software tool that is available separately. SMfit ACT® Remote is compatible with both SMfit ACT® Calibration and SMfit ACT® Basics. It enables remote access to the displays connected to the network and control of these displays via a central computer.

Additional information about this software package is available on the Siemens Display Technologies' website.

See also

Information on the display settings (Page 28)

Color coordinate setting (Page 29)

Internet: (http://www.siemens.com/displays)

8.2 Display-specific software support in SMfit ACT® Basics

The SMfit ACT® Basics program is described in the corresponding documentation normally included on the software and documentation CD. The SCD 21310 display is supported by SMfit ACT® Basics version 3.4 and higher.

Operation

9

9.1 Switch on the display and PC

Once commissioned, operation of the display is limited to switching it on and off.

After switching on the display, the operation LED is lit green continuously. If the LED lights up with another color, the device is not operating within normal parameters.

See also

Troubleshooting (Page 39)

9.2 Measures in the event of an error

Should the display not function correctly, Siemens recommends checking all basic connections and operation errors before contacting service personnel

See also

Troubleshooting (Page 39)

Service and maintenance

10

10.1 Cleaning

Caution

Device maintenance, cleaning and disinfecting

- The front panel is extremely sensitive to mechanical damage. Avoid all scratches, knocks etc.!
- Remove moisture immediately; contact with water over a longer period can cause discoloration or allow calcium deposits to form on the surface.
- When dirty, clean the front panel using a soft, dry microfiber cloth and, if necessary, a cleaning agent. Only clean housing parts using the recommended cleaning agents.
- The entire display must only be disinfected using the tested disinfecting agents.

Recommended cleaning and disinfection agents:

Agent class	Tested cleaning and disinfection agents:	Further examples
Alcohol	Ethyl alcohol, 96%	Hospiset cloth Mikrozid liquid
Aldehyde	Melsitt Cidex	Aldasan 2000 Kohsolin Gigasept FF
Chlorine derivatives	Terralin	Quartamon Med
Disinfecting agents	TaskiDS5001 (Diverseylever Labs) Morning Mist Surfanios Fraicheur Citron (Anios Labs)	
Guanidine derivatives	Lysoformin	
Quaternary compounds	Incidur spray, undiluted	

Agent class	Tested cleaning and disinfection agents:	Further examples
Standard household washing-up liquid	Tempo	Fairy Ultra, Pril, Palmolive
Petroleum spirit	Petroleum ether	
Pyridine derivatives	Activ spray, undiluted	
Water	Tap water Distilled water	

Unauthorized cleaning and disinfection agents:

Agent class	Tested cleaning and disinfection agents:
Peroxide compounds	Perform Dismozon pur

These cleaning and disinfection agents can bleach the paint after a longer period of application.

10.2 Maintenance

Routinely check the display settings

The display requires little maintenance. The illumination properties slowly may change due to aging of the LCD unit and the backlight. For this reason, routinely check and, if necessary, correct the display settings to ensure compliance with local guidelines. Siemens also recommends checking the displays for pixel errors.

A Serial Spot Meter, Universal Serial Luminance Meter or an Advanced Serial Luminance Meter can be used for taking measurements. These units can be connected directly to the display.

- One can automatically perform all calibration and quality tests using the SMfit ACT® Calibration program.
- One can also manually adjust display settings using a Serial Spot Meter and the SMfit ACT® Basics program.

Notice

Confirm image quality visually after calibrating the display

After calibration, the display must be visually inspected to verify successful and correct completion of the calibration procedure. This inspection can be performed by reviewing the SMPTE image. The gray levels should be displayed correctly and visibly at both 5% and 95%. Alternatively, the VerLum image can serve as a useful test pattern. Successful calibration can be verified if the small squares are displayed correctly in all gray shades.

See also

Check for pixel defects (Page 28)
Program for changing the display settings (Page 31)
Use of the serial interface (Page 25)

Troubleshooting

11

The LED continuously lights up green when operating normally. In the event of a fault, localization is possible based on the screen image and the operation LED.

- Please check the possible reasons and remedies listed in the table before contacting service personnel.

More information

SMfit ACT® provides additional information concerning the operating status of the display. These options are described in detail in the SMfit ACT® user manual.

Screen	LED	Cause	Remedy
No picture	Dark	Switch is off	Switch on power switch
		Power cable is not plugged in or incorrectly plugged in.	Check power cable
		Power cable is defective	Replace power cable
		Blown fuse	Inform service personnel
	Green (blinking)	No fault, DPMS (Display Power Management Signaling) active.	The operating system on the workstation switches the display to power down mode (to save energy and extend the life of the backlight unit).
		No DVI signal	DVI cable is not connected
		Incorrect timing is set.	Correct the timing
	Red (blinking quickly)	Dangerous temperature threshold exceeded: Power consumption of the device will be reduced to a minimum to reduce the temperature.	Switch off display. Check the ventilation and improve if necessary.
		Internal fault	Inform service personnel
	Green	Video signal detected, but the display is setup incorrectly	Check settings with SMfit ACT® (e.g. LUT, brightness, no test image, etc.).
		Video signal detected, but device defective	Inform service personnel

Screen	LED	Cause	Remedy
Picture displayed	Green	No error, correct operating status	–
	Green (blinking)	No fault, but the refresh rate is not setup optimally for the display	Set image refresh rate for the graphics card to 30 Hz (if the rate is not optimized, flickering effects may be noted in moving images). Check the resolution
	Red (blinking slowly)	Critical temperature threshold exceeded: The target value for the backlight unit control system will be halved to significantly reduce the luminance level to help lower the temperature avoid potential damage.	Switch off display. Check the ventilation and improve if necessary. Select a lower luminance level for standard operation.

See also

Switch on the display and PC (Page 26)

Technical specifications

12

12.1 Display features

Type	TFT, dual domain, IPS amorphous silicon
Screen size	318 mm x 424 mm
Screen diagonal	20.8" (52.8 cm)
Resolution	1536 x 2048 max. (pixels in portrait orientation)
Refresh rate	60 Hz
Pixel organization	24 bit (8 bit RGB): 3 subpixels per pixel
Pixel pitch	0.207 mm x 0.207 mm
Contrast ratio	400:1 typically
Horizontal viewing angle	Typically 170° at CR: 10:1
Vertical viewing angle	Typically 170° at CR: 10:1
Protective pane (for SCD 21310 DP)	Protective glass with non-reflective optical coating on both sides
Backlighting	CCFL
Screen brightness	Typically 400 cd/m²
Lifetime of backlight	30,000 hours (at 25 °C operating temperature)

12.2 Power supply

Power connector	Appliance plug socket
Line voltage	100 V ... 240 V AC (± 10%)
Line frequency	50 ... 60 Hz (± 5%)
Power consumption	105 W (maximum)

12.3 Inputs/outputs

DVI input	Dual link DVI-I socket Service and communication with SMfit ACT® over DDC channel
RS 232	Mini-DIN photometer socket
USB	Service and optional communication with SMfit ACT®
RJ 45	Service or software update

12.4 Controls and connectors

Rear side	• 1x power switch • 1x operation LED • 1x serial interface (6-pin mini-DIN socket) *Beneath protective cover:* • 1x power connection socket • 1x DVI • 1x RJ 45 • 1x USB (optional) *Note:* Use the SMfit ACT® Basics or SMfit ACT® Calibration software to adjust the display settings.

12.5 Mechanical design

Housing components	Metal (sectional frame)
Protective pane (for SCD 21310 DP)	Protective glass with non-reflective optical coating on both sides
Ventilation openings	In rear panel
Degree of protection	IP20 in accordance with DIN 40050
Connector panel	On rear panel, under cover
Weight in kg	
• SCD 21310 D (without stand)	7.1
• SCD 21310 D (with stand)	12.1
• SCD 21310 DP (without stand)	8.4
• SCD 21310 DP (with stand)	13.4
Dimensions (W x H x D) in mm	
• SCD 21310 D/DP (without stand)	366 x 472 x 110
• SCD 21310 D/DP (with stand)	366 x 511 ... 610 x 240

12.6 Climatic conditions

Operation

Temperature range	0 °C ... 40 °C ambient temperature
Temperature gradient	Max. 5 °C/h, no condensation

During transport and storage (packaged)

Temperature range	-20 °C ... +60 °C ambient temperature
Temperature gradient	Max. 5 °C/h, no condensation

12.7 Mechanical requirements

Operation

Vibrations	To EN 60068-2-6 10 ... 58 Hz at ± 0.075 mm oscillation 58 ... 500 Hz at 10 m/s²
Shock	To EN 60068-2-29 150 m/s², 6 ms

Packaged unit

Vibrations	To EN 60068-2-6 5 ... 8.51 Hz at ± 3.5 mm oscillation 8.51 ... 500 Hz at 10 m/s²
Shock	To EN 60068-2-29 250 m/s², 6 ms (in storage packaging)
Falls	To EN 24180-2 60 cm height

12.8 Safety regulations

Approvals	EN 60601-1 CAN/CSA - C 22.2 No. 601.1 UL 60601-1
Protection class	Protection class I
Degree of protection	IP20
Conformity	CE to MPG 93/42/EEC (Class I)

12.9 Electromagnetic compatibility

Interference voltage/emitted noise	EN 60601-1-2 Class B FCC Class B
Voltage fluctuations	EN 61000-4-11
Burst on power cables	EN 61000-4-4 2 kV
Burst on signal lines	EN 61000-4-4 1 kV
Surge on power cables	EN 61000-4-5 1 kV symmetric, 2 kV assymmetric
Electrostatic discharge on casing parts (ESD)	EN 61000-4-2 8 kV air, 6 kV contact
RF irradiation	EN 61000-4-3 80 MHz ... 2500 MHz, 3 V/m 80% AM 1 kHz
HF on network and signal line	EN 61000-4-6
Low-frequency and static magnetic fields	EN 61000-4-8 Magnetic DC fields: 4000 A/m Magnetic alternating fields: 1000 Aeff/m
Line reaction to harmonics	EN 61000-3-2
Line reaction to voltage fluctuations	EN 61000-3-3

See also

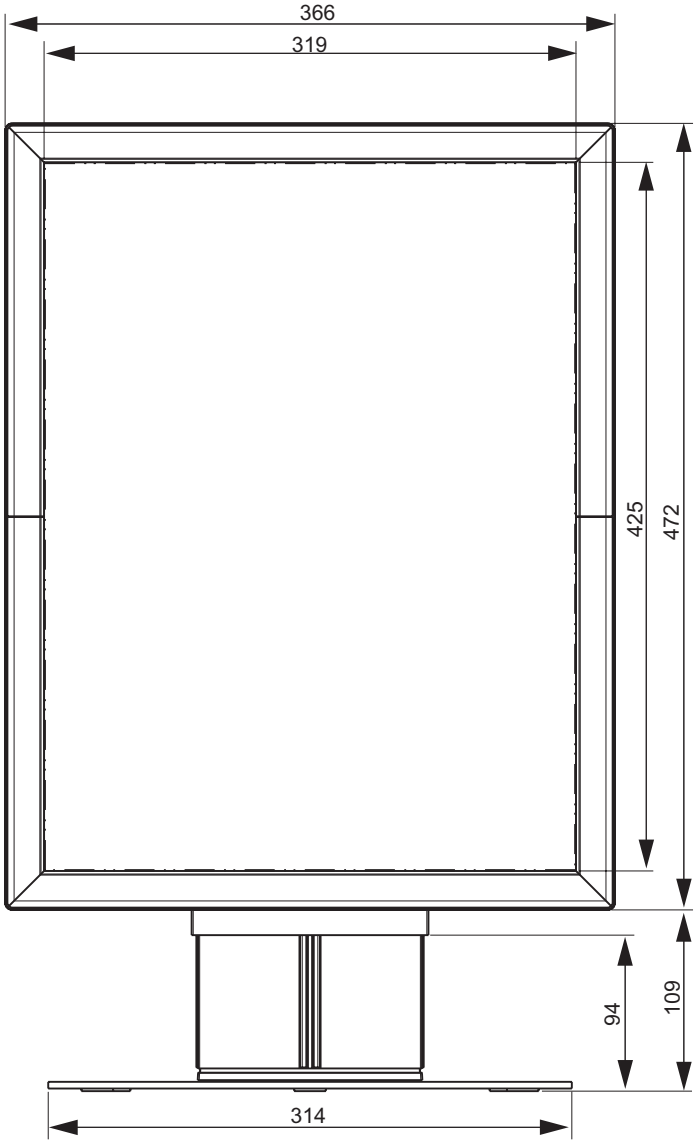
Guidance and manufacturer's declaration - Electromagnetic emissions (Page 55)

13 Dimensional drawings

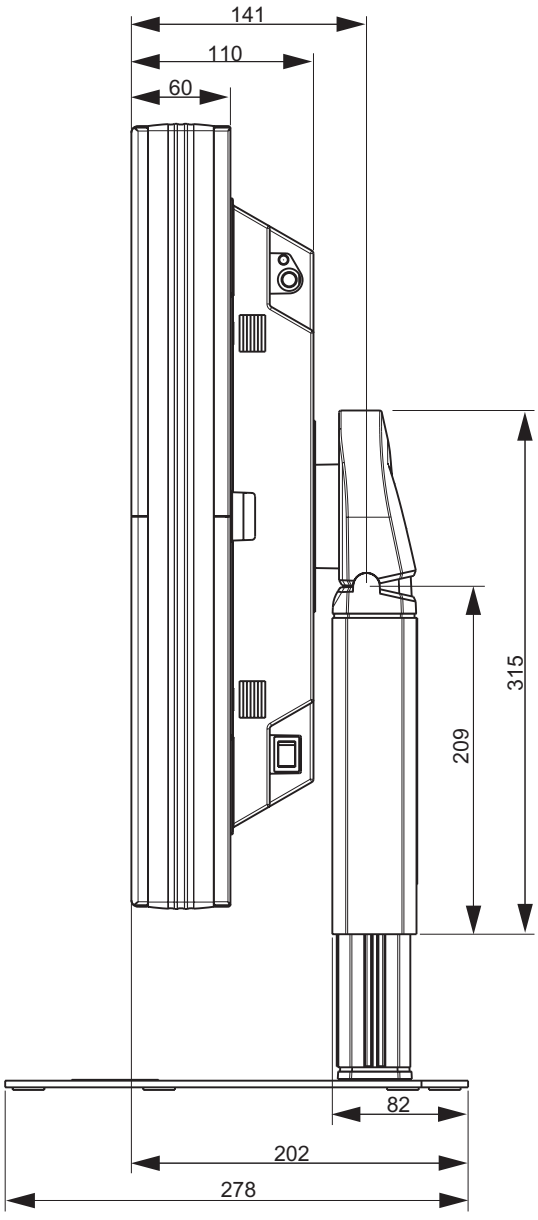
All dimensions in mm

13.1 Portrait

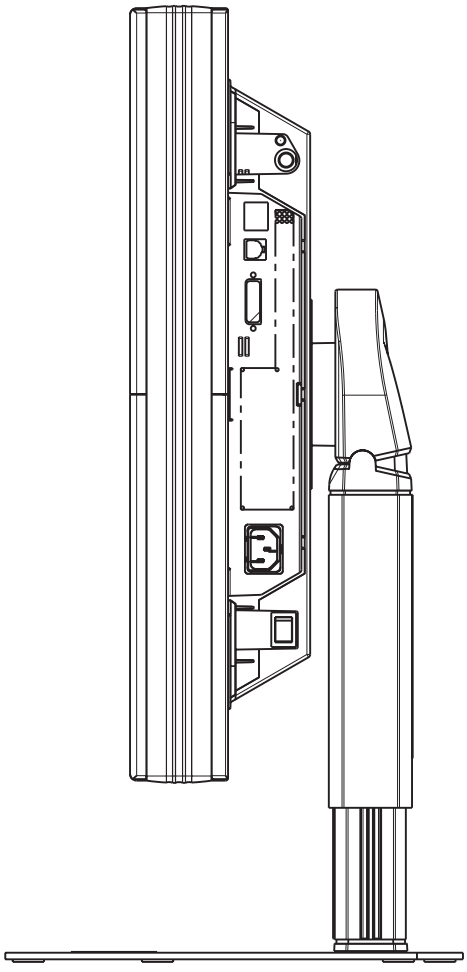
13.1.1 Front view



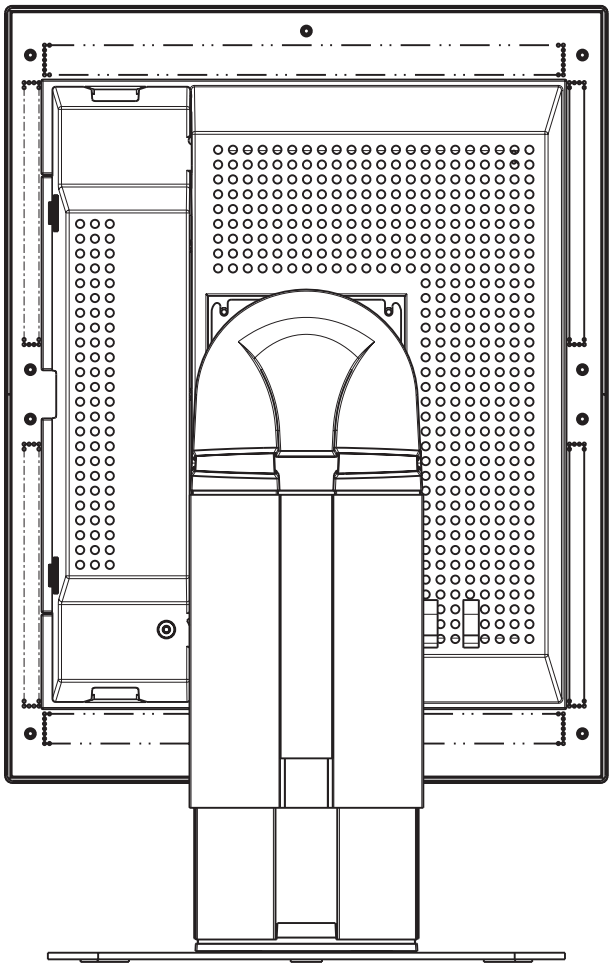
13.1.2 View from right with cover



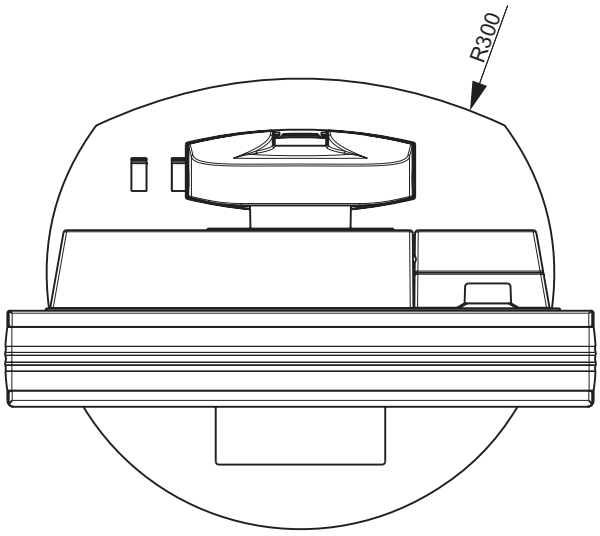
13.1.3 View from right without cover



13.1.4 Rear view

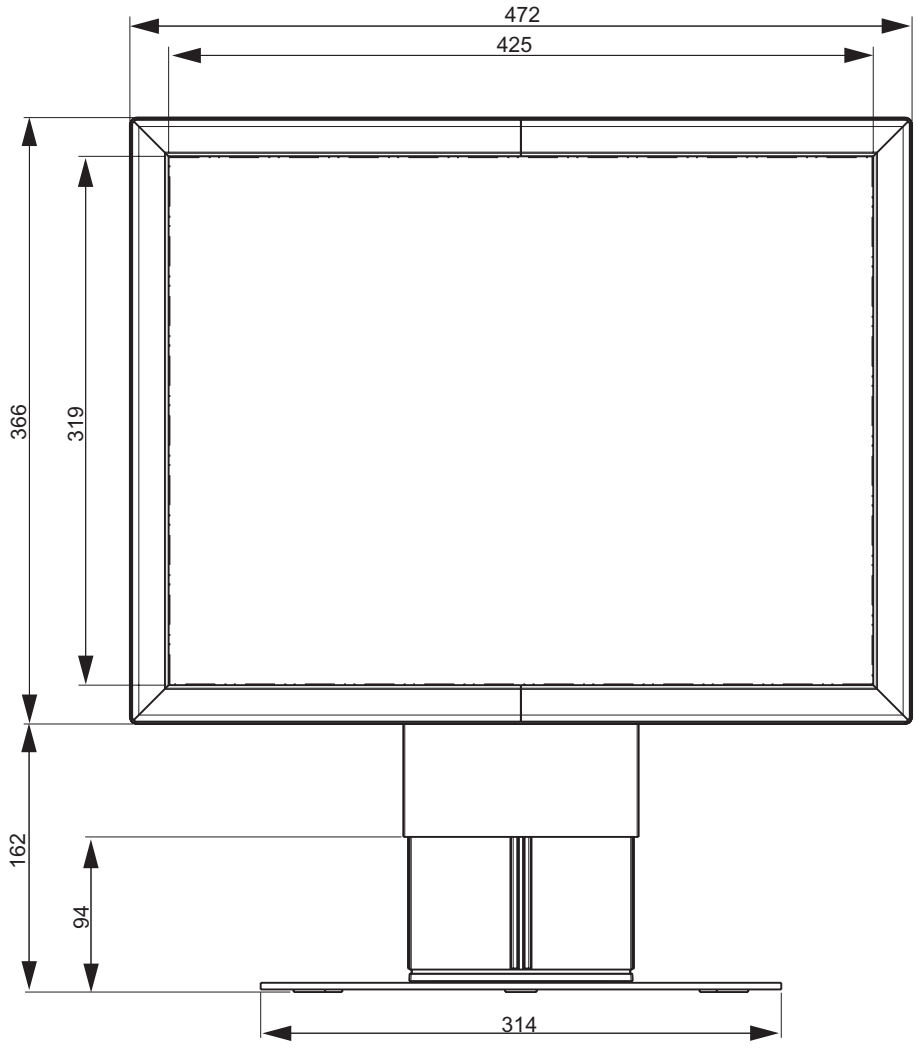


13.1.5 View from above

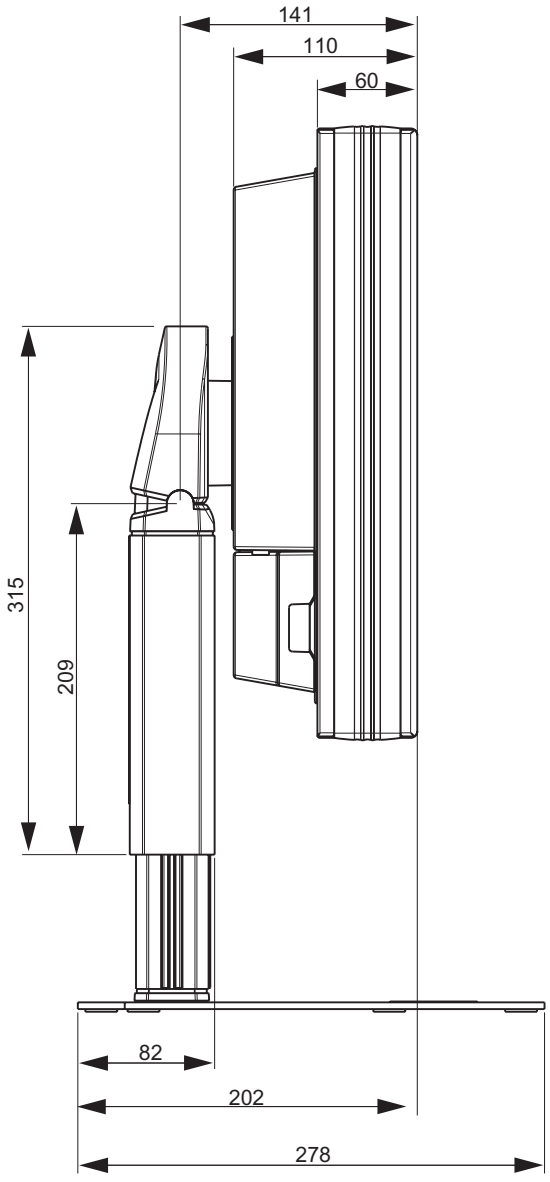


13.2 Landscape

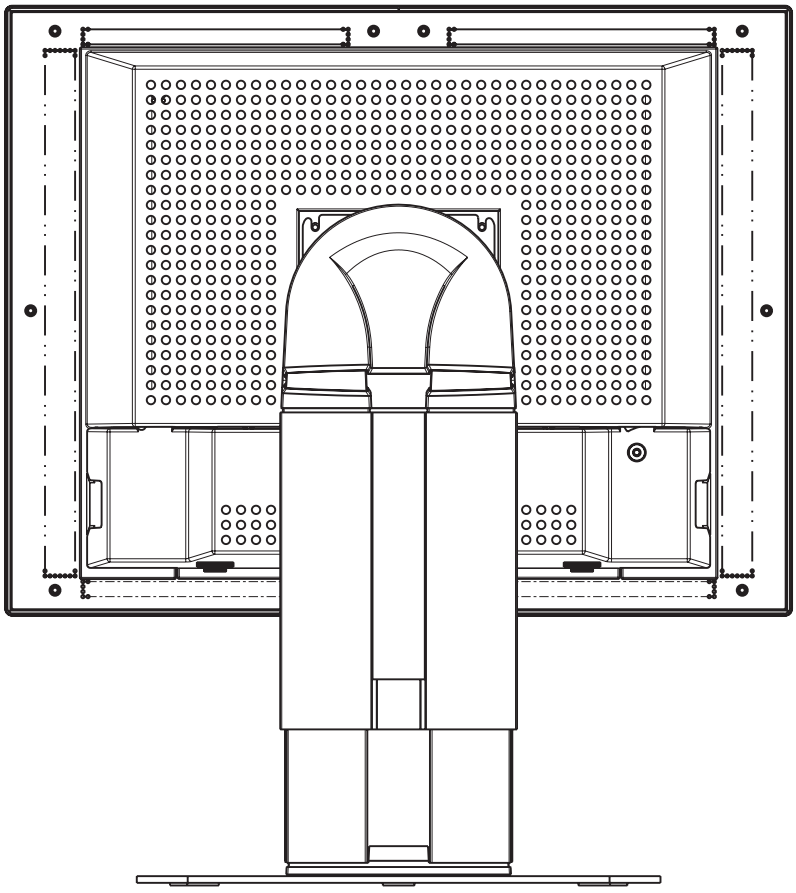
13.2.1 Front view



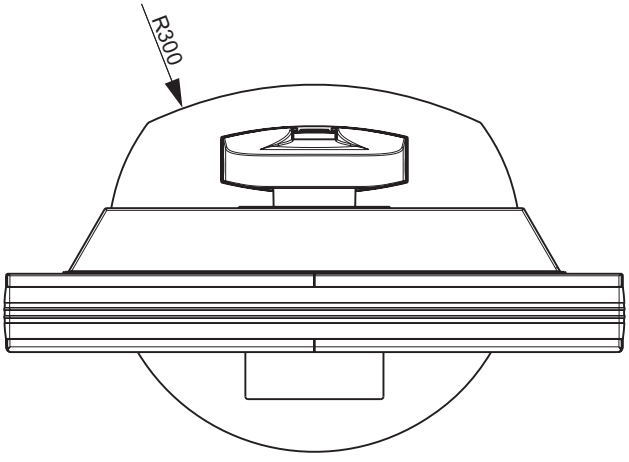
13.2.2 View from left



13.2.3 Rear view



13.2.4 View from above



Appendix

A

A.1 Guidance and manufacturer's declaration - Electromagnetic emissions

The SCD 21310 device is intended for use in the environment specified below. The customer or user of the SCD 21310 should make sure that it is used in such an environment.

Interference emission tests	Compliance	Electromagnetic environment - guide
RF emissions to CISPR 11	Group 1	The SCD 21310 uses RF energy only for its internal functions. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions to CISPR 11	Class B	The SCD 21310 is suitable for use in all types of location, including domestic buildings and those directly connected to the public power supply network that supplies buildings used for domestic purposes.
Harmonic emissions to IEC 61000-3-2	Class A	
Voltage fluctuations / flicker emissions to IEC 61000-3-3	Complies	

See also

Safety notes (Page 9)

General connection information (Page 21)

Electromagnetic compatibility (Page 45)

A.2 Loss of warranty

All unauthorized electrical or mechanical alterations on or in the unit will render the warranty null and void.

A.3 Warranty

All commitments on the part of Siemens AG are contained in the respective sales contract, which also contains the complete and solely applicable warranty conditions. These warranty conditions in the contract are neither extended nor limited by the contents of this publication.

A.4 Repairs

Please contact the distributor from whom the product was originally purchased.

A.5 Environmental protection

Please observe all local requirements and laws pertaining to the disposal of displays.

A.6 Accessory devices

Devices connected to the display (e.g. PC) must also comply with the relevant safety specifications.

A.7 Contact address

E-mail: dt.aud@siemens.com

See also

Internet: (http://www.siemens.com/displays)

Index

A

Ambient temperature
  Operation, 43
  Transport and storage, 43
Ambient temperature range, 17

C

Carry out calibration and quality tests automatically
  With SMfit ACT® Calibration, 36
Ceiling mounting, 19
Change of environment, 17
Changes to the settings
  via SMfit ACT® Basics and SMfit ACT® Calibration, 28
Connect ambient light sensor, 22, 25
Contact partners, 56

D

DDC channel, 27
Desktop
  Desktop version, 13
Display
  Avoid reflections on the screen, 17
  Cleaning and disinfection agents, 35
  Dimensions, 43
  Minimum clearance to other devices, 18
  Performance features, 14
  Weight, 43
Display Power Management Signaling
  See also DPMS, 28
DP
  Desktop version with protective glass pane, 13
DPMS
  Display Power Management Signaling, 28
DVI cable, 26, 27, 39
DVI connector, 22, 23
DVI plug
  Connect to DVI socket, 24
DVI video cable, 13

E

EDID
  Extended Display Identification Data, 27
Electromagnetic compatibility
  Standards/guidelines, 45

F

Fully Automated Stability
  Fully Automated Stability, 14

I

Image sticking, 27
IPS
  In-Plane Switching, 14
ISS
  Integrated stability system, 14

M

Manually change display settings
  With Serial Spot Meter and SMfit ACT® Basics, 36
Measuring instruments
  for maintenance, 36

N

Non-heating appliance connector, 23, 24
Non-heating appliance connector
  Connecting to power input of display, 24
Note
  for installations in the USA and Canada, 23
  on cable installation, 21

O

Observe EMC requirements when connecting, 21
Order No.
  SCD 21310 D, 13

SCD 21310 DP, 13

P

Packaging material, 13
photometers
Approved, 22
Pixel defects
Correcting defective pixels, 28
Power cable, 9, 13, 23
Power connector, 22, 23, 41
Power supply, 23
Product disposal, 56

S

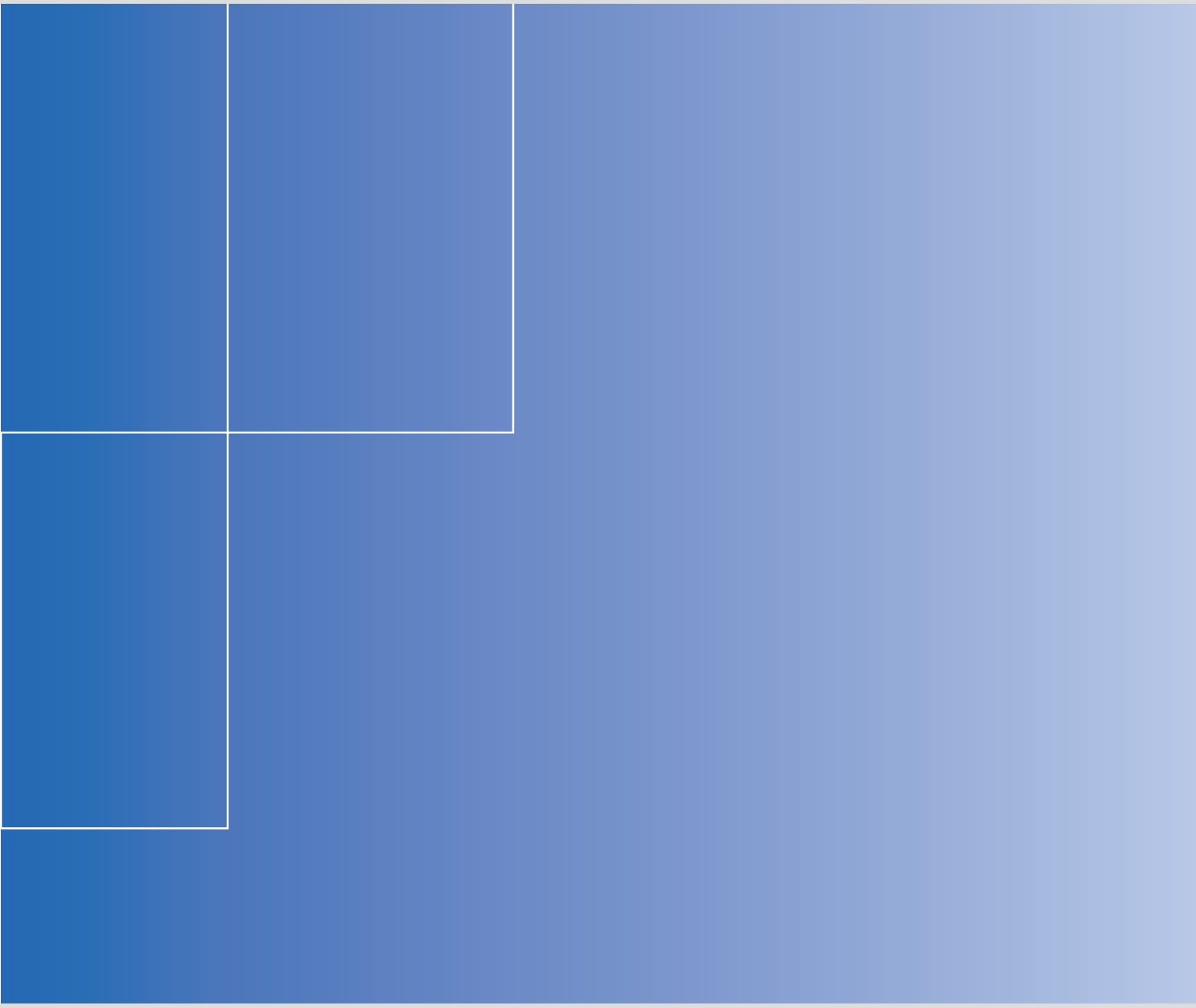
Serial interface
Connect devices, 22, 25
Serial Spot Meter
Connection to serial interface, 22, 25
Measuring instrument, 36
Service
Authorized personnel, 9
Service connection, 23
Servicing socket
See also serial interface, 25
Setting the display
using SMfit~ACT®~Basics software or
SMfit~ACT®~Calibration software, 42
settings
Application-optimizing, 14
Shielding measures, 21
SMfit ACT® Basics
Information on, 31
SMfit ACT® Calibration and SMfit ACT® Remote
Information on, 31
specifications
Fastening screw, 19
Start-up sequence of display and PC, 26

U

Universal Serial Luminance Meter
Connection to serial interface, 22, 25
Measuring instrument, 36
USB connection, 23
Users
Health personnel, 9

V

Ventilation, 17
VESA adapter, 19



Order No.: A5E00456472N-001

Siemens AG

Automation and Drives
Systems Engineering Display Technologies
Siemensallee 84
76187 KARLSRUHE
DEUTSCHLAND

www.siemens.com/displays